	Application No.	Applicant(s)
Notice of Allowability	10/621,455	V. KOTHURI, RAVI KANTH
	Examiner	Art Unit	
	Fred Ferris	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to _19 January 2007_.

2. ☒ The allowed claim(s) is/are _1,3-17,20 and 22_.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
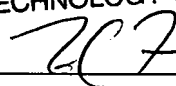**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

    Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _20070327_ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

FRED FERRIS
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100

PTOL-37 (Rev. 08-06)   Notice of Allowability   Part of Paper No./Mail Date 20070327

DETAILED ACTION

1.   *Claims 1-23 have been presented for examination based on applicant's*

amendment filed 19 January 2007. Applicants' amendment, and the examiners

amendment of record appearing below, has now cancelled claims 2, 18, 19, 21, and 23.

Claims 1, 3-17, 20 and 22 remain pending in this application and have now been

allowed over the prior art of record.

Response to Arguments

2.   *Applicant's arguments filed 19 January 2007 have been fully considered and are*

persuasive.

   Regarding applicants' response to drawing objections: The examiner withdraws

the objection to the drawings in view of applicants' Figure 1 replacement sheet filed 19

January 2007.

   Regarding applicants' response to 112(2) rejection: The examiner withdraws the

112(2) rejection in view applicants' amendment to the claims filed 19 January 2007.

   Regarding applicants' response to 101 rejections: The examiner withdraws the

101 rejections in view applicants' amendment to the claims filed 19 January 2007, and

the examiners' amendment of record appearing below.

   Regarding applicants' response to double patenting rejection: Applicants'

amendment to the claims, and the examiners' amendment of record, has now clearly

distinguished the claimed subject matter of the instant invention over claims 1-20 and 1-

27 of copending Application Numbers 10/397,529 and 10/397,530 respectively.

Accordingly, the examiner withdraws the double patenting rejection.

Regarding applicants' response to 102/103 prior art rejections: The examiner

withdraws the 102/103 prior art rejections in view applicants' amendment to the claims

filed 19 January 2007, and the examiners' amendment of record appearing below.

EXAMINER'S AMENDMENT

3.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Mr. Chad Jackson on March 27, 2007.

Amend the claims as follows:

1. (currently amended) A method for determining a [[with-distance]] within-

distance relationship between a first geometry object and a second geometry

object, the method comprising:

 receiving a query; and

 providing the query to a first filter configured to:

  define an exterior approximation of the first geometry and the

second geometry;

  compute a distance between the exterior approximations;

> compare the computed distance with a first predetermined distance to determine whether the second geometry satisfies a first filter condition with respect to the first geometry, and
>
> > if the first filter condition is satisfied, providing the second geometry to a query result set,
>
> > otherwise, defining an interior approximation of the first geometry;
>
> expanding the interior approximation by a second predetermined distance; and
>
> > comparing the expanded interior approximation with the second geometry to determine if the second geometry satisfies the first filter condition with respect to the first geometry; and
>
> > if the first filter condition is satisfied, providing the second geometry to a query result set,
>
> > otherwise, providing the first geometry and the second geometry to a second filter configured to perform [[processing]] an exact mathematical comparison of [[on]] the first geometry and the second geometry to determine whether the second geometry satisfies a second filter condition with respect to the first geometry; and
>
> > if the second filter condition is satisfied, providing the second geometry to the query result set,
>
> > otherwise, excluding the second geometry from the query result set,

wherein the result set specifies that the within-distance relationship between the

first geometry object and the second geometry object is satisfied.

2. (cancelled)

3. (currently amended) The method according to claim [[2]] 1, wherein the first

filter condition is satisfied if the second geometry is inside the expanded interior.

4. (currently amended) The method according to claim [[2]] 1, [[further

comprising: the first filter further operable to:]] wherein the exact mathematical

comparison includes computing [[compute]] an exact distance between the first

geometry and the second geometry to determine if the second geometry satisfies

the first filter condition with respect to the first geometry.

7. (currently amended) The method according to claim[[2]] 1, wherein defining

the approximation of the first geometry comprises:

>   *identifying a center of the first geometry;*

>   *identifying a minimum distance from the center to a boundary of the first*

geometry; and

>   *defining a circle having the minimum distance as its radius and the center*

of the first geometry as its center;

>   *wherein determining whether the second geometry satisfies a first filter*

condition with respect to the first geometry comprises comparing the circle with a

second geometry.

11. (currently amended) The method according to claim [[2]] 1, wherein each

circle is entirely contained within the first geometry.

17. (original) The method according to claim [[2]] 1, wherein the interior

approximation comprises at least one tile.

18. (cancelled)

19. (cancelled)

20. (currently amended) A computer program product for performing a

process of determining within-distance relationships among objects represented in

a database, comprising:

a processor operable to execute computer program instructions; and

a memory operable to store computer program instructions executable by

the processor, for performing the steps of:

receiving a query; and

providing the query to a first filter configured to:

define an exterior approximation of the first geometry and the second

geometry;

compute a distance between the exterior approximations;

compare the computed distance with a first predetermined distance

to determine whether the second geometry satisfies a first filter condition with

respect to the first geometry, and

      if the first filter condition is satisfied, providing the second geometry

to a query result set,

      otherwise, _defining an interior approximation of the first geometry;_

      expanding the interior approximation by a second predetermined distance;

and

      comparing the expanded interior approximation with the second

geometry to determine if the second geometry satisfies the first filter condition

with respect to the first geometry; and

      if the first filter condition is satisfied, providing the second geometry

to a query result set,

      otherwise, providing the first geometry and the second geometry to a

second filter configured to perform [[processing]] _an exact mathematical_

comparison of [[on]] the first geometry and the second geometry _to determine_

whether the second geometry satisfies a second filter condition with respect to

the first geometry; and

      if the second filter condition is satisfied, providing the second

geometry to the query result set,

      otherwise, excluding the second geometry from the query result set,

wherein the result set specifies that the within-distance relationship between the

first geometry object and the second geometry object is satisfied.

21. (cancelled)

22. (currently amended) A system for performing a process of determining

relationships among objects represented in a database, comprising:

      a processor operable to execute computer program instructions; and

      a memory operable to store computer program instructions executable by

the processor, for performing the steps of:

      receiving a query; and

      providing the query to a first filter configured to:

          define an exterior approximation of the first geometry and the

second geometry;

          compute a distance between the exterior approximations;

          compare the computed distance with a first predetermined distance

to determine whether the second geometry satisfies a first filter condition with

respect to the first geometry, and

          if the first filter condition is satisfied, providing the second geometry

to a query result set,

      otherwise, defining an interior approximation of the first geometry;

      expanding the interior approximation by a second predetermined distance;

and

comparing the expanded interior approximation with the second

geometry to determine if the second geometry satisfies the first filter condition

with respect to the first geometry; and

if the first filter condition is satisfied, providing the second geometry

to a query result set,

otherwise, providing the first geometry and the second geometry to a

second filter configured to perform [[processing]] an exact mathematical

comparison of [[on]] the first geometry and the second geometry to determine

whether the second geometry satisfies a second filter condition with respect to

the first geometry; and

if the second filter condition is satisfied, providing the second

geometry to the query result set,

otherwise, excluding the second geometry from the query result set,

wherein the result set specifies that the within-distance relationship between the

first geometry object and the second geometry object is satisfied.

23. (cancelled)

Examiners' Amendment summary: Claims 2, 18, 19, 21, and 23 have been

cancelled. Claims 5, 6, 8-10, and 12-16 remain unchanged over applicants'

amendment filed 19 January 2007.

Allowable Subject Matter

4.   Claims 1, 3-17, 20 and 22 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

Applicants are disclosing a computer implemented method, system and computer code for determining a relationship between geometry objects by finding a minimum bounding rectangle of the query geometry, determining a minimum bounding rectangle of each geometry, and identifying candidate data geometries by determining whether data geometries fulfill a first filter condition with respect to the query geometry by comparing the minimum bounding rectangles until no more data remains. This has been disclosed in the prior art of record.

While these elements are individually disclosed in the prior art, the prior art of record does not meet the conditions as suggested in MPEP section 2132, namely:

"The identical invention must be shown in as complete detail as is contained in the ... claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an **ipsissimis verbis** test, i.e., identity of terminology is not required. **In re Bond**, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

In particular, the prior art of record does not disclose the specific combination of system elements and sequence of method steps inclusive of defining an interior approximation of the first geometry and <u>expanding the interior approximation by a second predetermined distance</u>, and subsequently <u>comparing the expanded</u>

interior approximation with the second geometry to determine if the second

geometry satisfies the first filter condition with respect to the first geometry, and

if the first filter condition is satisfied, providing the second geometry to *a query*

result set, otherwise, providing the first geometry and the second geometry to a

second filter configured to perform an exact mathematical comparison of the first

geometry and the second geometry to determine whether the second geometry

satisfies a second filter condition with respect to the first geometry; and if the

second filter condition is satisfied, providing the second geometry *to the query*

result set, otherwise, *excluding the second geometry from the query result set,*

where *the result set specifies that the within-distance relationship* between the

first geometry object and the second geometry object is satisfied, as now recited in

independent claims 1, 20, and 22. Dependent claims 3-17 are deemed allowable as

depending directly or indirectly from claim 1.

The prior art of record discloses certain elements of the claimed invention as

follows:

- "Efficient Processing of Large Spatial Queries Using Interior Approximations",

Kothuri et al: Teaches determining a with-distance relationship between a first

geometry object and a second geometry object by defining an exterior approximation of

the first geometry and the second geometry and computing a maximum distance

between the exterior approximations and further comparing the computed maximum

distance with a first predetermined distance to determine whether the second geometry satisfies a first filter condition with respect to the first geometry. However Kothuri does not disclose the features relating to including/excluding geometries from a query result set based on the filter conditions from an expanded interior approximation as described above and now required by independent claims 1, 20, and 22.

- US Patent 6,438,269 issued to Kim: Also discloses determining a with-distance relationship between a first geometry object and a second geometry object by defining an exterior approximation of the first geometry and the second geometry and computing a maximum distance between the exterior approximations and further comparing the computed maximum distance with a first predetermined distance to determine whether the second geometry satisfies a first filter condition with respect to the first geometry. However Kim again does not disclose the features relating to including/excluding geometries from a query result set based on the filter conditions from an expanded interior approximation as described above and now required by independent claims 1, 20, and 22.

The features noted above relating to the specific combination of system elements and sequence of method steps, as now recited in independent claims 1, 20, and 22 renders the claimed invention non-obvious over the prior art of record. Dependent claims 3-17 are deemed allowable as being dependent from independent claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached at 571-272-2279. The Official Fax Number is: (571) 272 8300

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